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DESCRIPTION OF DESIGN

AND

DRAWINGS

FOR THE

Proposed Centennial Buildings,

To be Erected in Fairmount Park.

PRESENTED BY

SAMUEL SLOAN, Architect.

PHILADELPHIA.

PHILADELPHIA:
KING & BAIRD, PRINTERS, 607 SANSOM STREET.
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To the Committee on Plans and Architecture
of the U. S. Centennial Commission :

GENTLEMEN :

Thanking you for your selection of my design, as one of the ten set apart for final competition for the National Centennial Buildings in Fairmount Park, I now proceed to explain my present plans, as herewith presented.

No. 1. A block plan, showing the location of buildings, railroads, drives, &c.

No. 2. A perspective view of the permanent building, as it will appear when the temporary structure is removed.

No. 3. A perspective view of the permanent and temporary buildings, as they will appear together.

No. 4. A geometrical elevation of East front of permanent and temporary buildings connected.

No. 5. A geometrical elevation of the West front, showing the whole range of buildings on that side.

No. 6. A geometrical elevation of the North and South fronts, showing the permanent and temporary buildings as connected, and covered way crossing Belmont avenue to Machinery Department.

No. 7. Interior perspective of Memorial Hall looking north or south.

No. 8. Memorial Arch and principal entrance.

No. 9. A longitudinal section east and west. This shows the gallery that extends from Memorial Hall to the west end of Exhibition Buildings, where it crosses Belmont avenue above the archways, as shown on No. 6.

No. 10. A section through temporary buildings north and south.

No. 11. A section through Memorial Hall east and west, showing interior of Dome and vestibules.

No. 12. A section east and west through Memorial Hall, north and south of Dome.

No. 13. A section through a pavilion of the temporary buildings, to a large scale, showing the construction applying to the whole group.

No. 14. A ground plan of the first story of permanent and temporary buildings.

No. 15. A plan of second story of permanent building and gallery of temporary buildings, and their connection with the Machinery Department.

No. 16. A perspective view of Art Gallery.

No. 17. A ground plan of Art Gallery.

No. 18. A longitudinal section of Art Gallery.

No. 19. Transverse section of Art Gallery.

No. 20. Ground plan of Machinery Department.

No. 21. Transverse section of Machinery Department.

No. 22. Geometrical elevation of Machinery Department.

ASPECT.

The principal front I have been induced to face towards the east, because it will then directly face the city, presenting its most prominent features to the approaches from that quarter. The permanent Memorial Building will be most appropriately placed, I think, when looking towards the primitive capital of our now great nation.

Moreover, the eastern aspect is that chosen from time immemorial for great public edifices, and in a case like this, where the position is not determined by the fixed line of streets, but ample room left for choice of aspect, the ancient rule can be followed to the very letter.

This disposition is surely better than that of fronting on a locality which is certain, at no distant day, to be occupied by such improvements as manufactories, machine shops, warehouses and the like, especially owing to its close proximity to one of the most important railroads in the country.

In facing the east the grand front will have the advantage of a wide range of the Park for its foreground. The west elevation will likewise have the same advantage. The whole structure would be very conspicuous when thus placed, coming full into view when ascending the rising ground winding along the north of the Garden lawn, as well as from Elm avenue on the south of the grounds. In no other position could it produce as impressive an effect.

The south end of the building would be distant from Elm avenue about four hundred and fifty feet, averaging about the same from Lansdowne drive, thus affording ample opportunity for the most tasteful treatment of the grounds, as well as giving full scope for the approaches from the main thoroughfares.

SITE OF MEMORIAL HALL.

It is proposed to place the Memorial Hall on a plateau, that will extend from thirty to fifty feet beyond its walls, elevated four feet above the natural level of the ground, thus obtaining ample room for a terrace of suitable proportions, with balustrading, piers, pedestals for statuary, ornamental lamps, flights of steps, &c.

The base of the Memorial Building will rise eight feet above this plateau. At that height we will be on a level with the principal floor throughout the entire buildings.

Intended as it is, to be a permanent structure, this National Memorial Hall will, of course, be the prominent feature in the great centennial group of buildings, and therefore occupies the centre, extending north and south four hundred and fifty feet; a vestibule at each end, seventy-five feet wide, increasing this whole length to six hundred feet.

The width of the Memorial Building proper is one hundred and fifty feet, having vestibules on the East and West fronts of one hundred feet each.

STYLE OF ARCHITECTURE.

In choosing an appropriate style of architecture, the modernized classic of Palladio was selected as the most suitable. It possesses all the attributes of correct taste, at the same time that it affords ample opportunity for varied combinations and striking effects of light and shade. In it the rectangle and the dome are not at variance, as in other styles of architecture; and its united features present an appearance of grandeur and stability in harmony with this great Republic, whose Memorial Hall is to be its lasting historic construction.

The Palladian style presents likewise the great advantage of free scope for interior finish, untrammelled by those severe rules of art which control the exterior in the other classic styles. Having the use of all their members, it gives the architect the free use of them, together with the introduction of such other composition as his taste may suggest. And its proportions, whilst possessing all required strength, present that air of elegance which unity of system is so certain to attain to.

DESCRIPTION OF THE MEMORIAL BUILDING.

The entire length of the building, as has been stated, is six hundred feet. Its width two hundred and fifty. The centre projecting fifty feet on the east and west. Both these elevations presenting the same appearance. The north and south ends each project twenty-five feet from the main walls ; making a width of three hundred feet, and having their architectural finish alike.

On the Eastern or Grand Main Entrance front, is an arch fifty feet wide and one hundred feet high. The circle at the centre of the arch (as shown in design) will be filled with light iron tracery, at the middle of which will be emblazoned the Arms of the United States. Surrounding this, in a semicircle, the thirteen primitive States will occupy their respective positions—Pennsylvania being the Keystone. The arms of the other twelve being placed in the order of their admission to the Union.

Around these thirteen States, in another semicircle, will be located, in chronologic order, the twenty-four more recently admitted States, with the eagle represented on the Keystone.

This arrangement occupies the whole area of the second semicircle. The third and outer circle is filled in with the twelve Territories, with the eagle between them as guardian, and District of Columbia for its centre ; the screen below the arc of the circles is filled in with plants indigenous to America. The balustrade will have four statues on pedestals, representing *Commerce, Literature, Navigation and Agriculture.*

Immediately above this grand arch is a rectangular panel, on which, in bass-relief, is represented *Columbia welcoming the peoples of the world to protection, peace and plenty.*

On the Western front there will be a similar arch, each of the medallions having a star instead of the coat of arms of the States emblazoned. The centre medallion has the National Eagle. The panel corresponding with that on the front, to represent *Minerva scattering literature among the people.*

The panellings on each side of both the East and West Grand Arches occupying the abutments, will be filled with bass-reliefs, representing *Industrial Progress, Scientific Research, Reward of Labor,* and the *Triumph of Invention.*

These form the four corners of the main centre, and are crowned with statues representing America, Europe, Africa and Asia, according to the classification of those quarters of the globe in the Exhibition Buildings.

THE CENTRE DOME.

One hundred feet in diameter, and rising to a height of three hundred and ninety-two feet, is the Dome, located at the centre of the Memorial Building. It finishes with a lantern, on which is a statue of America looking to the east. This grand dome will be ribbed and panelled, having rich ornamentation and statuary around the base, with eagles on the curve, looking east, west, north and south, being designed to harmonize perfectly with the building it crowns.

MINOR DOMES.

On the four corners of the Memorial Building are panelled dies, seventy-five feet square, each surmounted by a dome of light design, with groups of statuary respectively facing east, west, north, and south.

INTERIOR OF THE CENTRE DOME.

The drum of the great Dome rests on a square of one hundred and fifty feet each way. This drum begins one hundred and fifty feet above the floor, and rises two hundred and eighty-eight feet, to the eye in the crown of the arch.

Around the base of it extends a gallery with classic balustrade, from which a fine view will be obtained, interior or exterior.

Just beneath the lantern and around the eye of the Dome, there will be a second gallery.

Both these galleries will be accessible from four points by easy and convenient flights of stairs, constructed in the thickness of the walls.

The Memorial Hall itself is surrounded on all sides by a gallery twenty-five feet wide and thirty-two feet above the floor, the front of which forms a stylobate, on which rests a colonnade of richly ornamented columns. To the top of the entablature from the floor the height is one hundred feet.

The arched ceiling rises forty-six feet above this, making the total height from the floor to the crown one hundred and forty-six feet.

The wall space back of the gallery just spoken of, is enriched with panels, tablets, &c., affording ample opportunity for artistic frescoes or bass-reliefs.

The ceiling is likewise panelled and enriched throughout.

OUTSIDE GALLERIES.

Galleries forty-two feet wide will extend along the East and West fronts of Memorial Hall, leading from the centre building to the pavilions on the four corners, or one hundred and fifty feet each in length. These will be on the same level with the interior gallery previously mentioned.

HEIGHT OF STORIES.

The First Story of these outside galleries is thirty-two feet in height.

The Second Story is forty-two feet high, to the springing of the arched ceiling.

The First Story of these four sections is divided into rooms, having sliding doors, by which they can be enclosed in separate apartments, or, when desired, be thrown all into one clear suite, thus adapting them either to offices or to exhibition purpose.

The Second Story of the same sections is likewise divisible into apartments, so as to make them in this story applicable to four picture and statuary galleries, and can be so lighted from the ceiling that each will make, if desired, one large picture gallery.

The rooms thus suggested as picture galleries in the Memorial Building, along the East and West fronts, communicate with the pavilions and grand vestibules in the centre. By opening the communicating doors an imposing vista is presented of six hundred feet.

The end pavilions and intermediate sections, extending east and west, from the gallery floor upwards, are in two stories, each thirty-two feet high. The first story is entered from the gallery of the Memorial Hall, and the second by the stairway or the vestibule; so that in future each end, as also the pavilions, can, if desired, be kept distinct from the Hall, for lectures and other purposes relating to art.

THE EXHIBITION BUILDINGS.

The Exhibition Building is in the Venitian style of architecture. It extends westward from the Main Building a distance of ten hundred and fifty-six feet, and north and south eleven hundred and eighty-four feet, connecting with it along the whole range.

The reason for adopting two differing styles in the Main and Exhibition Buildings, is that the former being permanent, demands solidity of construction, whilst the latter being but temporary, and requiring every possible facility for the admission of light, is better suited in the style chosen for it. The projecting wings are intended to harmonize with the Palladian dignity of the Memorial Building forming the great central attraction.

The Temporary or Exhibition Buildings are so located on the west side that the main avenue of one hundred and fifty feet extends in that direction four hundred and thirty feet, terminating with a circular end. From that point it is sixty-six feet wide, and continues to the west end of the Exhibition Building, where it enters the grand vestibule and entrance from Belmont avenue. There are six continuous avenues beginning and ending at the east end, including the one that surrounds the central avenue, giving *five* grand divisions for *ten* groups, each with its *ten* classes, extending through every State and country. Eight converging and intersecting avenues connect the whole with the Grand Centre, thus rendering each part of the Exhibition Building accessible from that point.

All the temporary buildings are alike in construction, except the one running east and west, which forms the main avenue, and connects with Memorial Hall. This is, as above stated, one hundred and fifty feet wide, having continuous galleries around it, twenty-five feet wide; thus leaving an avenue of one hundred feet in width for a promenade, with which the exhibition departments of all States and countries are in direct communication, and all are in full view from its galleries.

This building is one hundred feet high from floor to the roof, which is semicircular, having a span of one hundred feet, supported or abutted by reversed quadrants on either side, of twenty-five feet span.

The light is admitted through a continuous range of windows twelve feet high, placed all around the gallery, and a similar range above the spring of the arches, that groin into the roof. All these have balanced sash, opening or shutting at pleasure. There are also three domes admitting light in the roof, but these are not required except for effect.

All the other temporary buildings are alike in construction, and are each sixty-six feet wide, having avenues twenty-two feet wide in the clear. These are thirty-two feet high. The sides are continued up twenty feet higher than the avenues, to admit of a continuous range of windows along each side, of the same dimensions as those before mentioned.

The apex of each roof of all these buildings is eighty-four feet above the floor. The rafters for all are the same in dimensions and construction.

The upper rafters are of wood, with tension rods, braces and shoes, all of iron, as explained by a drawing.

Purlines in double lengths extend from one rafter to another, placed four feet apart, and boarded with milled boards, and covered with corrugated iron.

All the supporting posts are of wrought iron, twelve inches in diameter, twenty-two feet between centres, and used as conductors for the water from the roof. (This applies to the whole temporary structure, which covers nineteen acres, exclusive of the galleries and the buildings surrounding it.)

THE ENTRANCES TO THE EXHIBITION BUILDINGS.

There are numerous entrances, as will be seen by reference to the plans, the principal one being through the Main Centre, approached by the drive in the Park on the north, and from Elm avenue and adjacent streets on the south. There are separate entrances at the ends of Memorial Hall. These are especially for officers and season ticket holders.

At these entrances the business offices are located, as follows: For America on the south, and those for foreign officers on the north. This arrangement brings them in close proximity to their respective countries, securing direct communication with each other through Memorial Hall, as well as making it convenient for those having business with them.

Imposing entrances, but intended principally as means of exit, appear on the North and South fronts.

In addition to these, there are doors of exit at three points between the west and north, also between the west and south, opposite avenues leading from the centre.

At all the points alluded to, the buildings can be made available for waiting rooms, police officers, firemen's quarters and jury rooms.

The intermediate space on the outside is appropriated to water closets and other conveniences, so arranged as to be under the control of their respective officers. The space for these is twenty feet wide and twelve feet high. All entered privately from lobbies.

LEVEL OF EXHIBITION BUILDINGS.

The floors are all on one level, and correspond with those in Memorial Hall.

These Exhibition Buildings, when raised above the natural surface of the ground to the level of the permanent structure, give to that floor an elevation of about eleven feet at the west end, near Belmont avenue, increased to fourteen feet, at a point fifteen hundred feet westward.

It is not proposed to disturb the natural surface of the ground. It will simply require terracing around the exterior, and constructing brick piers to support a platform for the superstructure made of timber, substantially connected and braced in every way, leaving avenues for railway tracks through the centre and along each side, that the cars from the principal railways may enter with freight, and deliver it through hatchways in the floor; and also remove all debris that may accumulate, in order to keep the space beneath the floor free from combustible materials. It is proposed to run the track through the centre of Machinery Hall, and continue it through the main Exhibition Building, as far as the circular end of the grand avenue, and tramways to be constructed around each section to right and left, with separate cars, rendering every point of the building accessible. The same system would apply to the Machinery Department. A railway track can also be carried in on the main floor from the west end at Belmont avenue, and similar tramways placed in the six avenues, with a crane car to each of them, for lifting and placing articles of weight in their position. The block plan fully explains the arrangement.

In planning the temporary buildings, it has been my object to secure simplicity of construction and uniformity in detail, with a view to utilizing every part when the building has served its original purpose. Each section is complete when separated from the rest. The building at the west entrance can be reconstructed for other purposes, as can those at the north and south entrances, and those intended for offices, also. If care is exercised in the combination of materials, a large sum could be realized from the sale of these at the close of the Exhibition, and thus greatly lessen the first cost.

The sections of the buildings are so constructed that separate contracts can be made for them, and they can be brought to the grounds ready to set in place.

CONSTRUCTION OF FLOORS AND ROOF.

The floors of the temporary structure are of one and a half inch pine plank, laid with open joints (three-eighths of an inch) on four by ten inch beams, bearing on sills sustained by the brick piers, and spaced two feet apart.

Trap doors are made on every avenue, with one line of movable plank along the whole range, to facilitate cleaning and give light below.

Floors of galleries will be made with close joint. Their sides are guarded by a neat iron railing of emblematic design.

Arches are of light iron work. Ornamental galleries can be added to all the sections of the temporary buildings, if thought advisable.

LIGHT AND VENTILATION.

As seen, the building is lighted throughout by vertical windows in continuous ranges on each section of pavilions. From these an unobstructed light is obtained at an angle of forty-five degrees. We have thus not alone an abundance of light, but the advantage of a fine current of air through every part, which is facilitated by ventilators placed along the apex of the roof of each section: That being the warmest point, the heated air will naturally arise to it.

It may here be remarked that by placing the grand fronts east and west, it would give the whole the benefit of the prevailing currents of air. The wind at most seasons being from the southwest. The temporary buildings being lower than the permanent, would leave the latter the partial advantage of this influence, which would be entirely unobstructed on the removal of the former.

RAIN CONDUCTORS.

All posts being of hollow iron, twelve inches in diameter, will serve as conductors for rain water; and all being connected with large horizontal drain pipes, laid below the ground, the drainage of the roofs, etc., is easily carried off to a suitably constructed and located culvert, extending south to the most convenient point for its course eastward to the river, below the Water Works. All this system of drainage below the floor to be of perfectly sound and well connected terra cotta pipe.

WATER CLOSETS.

It is proposed to make cisterns three feet wide, three feet deep, and of sufficient length in all cases to accommodate each line of water closets.

These cisterns (or troughs) to be kept filled to within eight inches of the top with water, having supply and discharge.

Each cistern has a six inch drain pipe connected at the bottom, furnished with stopper or plug, and overflow pipe, and a reservoir with ball cock at one end, to regulate the water supply and its level. By raising the plug the contents are discharged, and the cistern cleansed by a flow of water from the opposite end, and upon replacing the plug the water flows in to the requisite level, and this repeated every twenty-four hours, is sufficient for all sanitary purposes.

The same arrangement applies to all the closets and urinals required in the temporary buildings. Provision has been made for one to every one hundred visitors. Assuming fifty thousand in one day, would require five hundred closets. The number can be diminished or increased as desired.

All the pipes from these reservoirs connect with and discharge into one main drain, with a trap to each branch, to prevent counter-currents during the discharge. This drain connects with the main culvert above alluded to, and provided for the reception of all drainage. Wash-stands are placed in all parts of the building, especially in all the lobbies immediately adjoining the water closets.

MEMORIAL HALL.

We now return to this building, and describe more fully the materials proposed for its construction.

Taking into consideration the extent of the building, and the limited time allowed for its completion, we would propose iron for the exterior, from the base line to the roof, for the columns, rafters and beams of the interior, and construction of the dome; for the latter I would suggest wrought and in part corrugated iron, to lessen the weight and facilitate the construction.

The base, as high as the floor, to be of dressed granite, and all the inner walls to be of hard brick, laid in cement. The first floor to be vaulted with same materials. The piers supporting the interior columns to be the same, with a stone binder every two feet, eight inches thick. The abutments and piers that support the dome are twenty-five feet square, and constructed of granite blocks, bedded in sheet lead. These piers carried up to a suitable level to receive the floor. All foundations laid with concrete, not less than two feet deep. The cellar to be thoroughly lighted and ventilated in every part, finished with a concrete and cemented floor, and provision made for all necessary air flues and drainage.

For the interior walls we propose brick, as above mentioned, and built independently of the iron, excepting where returns are required for jambs, &c., leaving an air space of eight inches between the iron and brick. This mode of construction permits the work to be carried on with great rapidity. The natural settling of the inner wall will not affect the exterior, and the work can be carried on at all seasons, particularly so far as applies to the exterior; that can all be prepared without any loss of time, and the embellishment produced at a very small expense. The building is so designed, that but few patterns are necessary for the castings, and eight separate contracts could be made for this branch of the work, without any difficulty in forming their connection. Another could be made for the dome, and one for the iron work of the interior. Then, without doubt, it could be completed within the required time. We would not advise the use of any other materials or different mode of construction. To insure the completion within the given time, the building must be under roof within one year, as the remaining year would be required for the completion of the interior.

The columns around the gallery of Memorial Hall are iron, of Corinthian proportions, with enriched capitals, the foliage composed of plants indigenous to America.

The arched ceiling of the Hall is panelled and enriched, also the panellings on the walls above and below the gallery; the balustrade, iron of appropriate design. The rafters that form the ceiling and roof are all of wrought iron, and sheathed, upon which furring lath are nailed to receive the plaster. The roof is also sheathed, and covered with corrugated iron. The lintels, beams and purlines are all of iron. The floors between the stories of the Art Museum and corner pavilions, the gallery floor, vestibule, and ceilings above them, will all be arched with brick, laid in cement.

The stairs are iron. The steps to be inlaid with encaustic tile. The same will apply to the platforms and all floors throughout this building, all of rich design, with appropriate national emblematic figures.

The four rooms on the second story alluded to as picture galleries, are lighted from above, with the light diffused uniformly over the walls. These will furnish sixteen hundred lineal feet of wall space, that can be made available for hanging pictures, by forty-four in height; in addition to that in the four pavilions, seventy-five feet square, and the two intermediate spaces of seventy-five by one hundred feet; the latter are two-stories, each thirty feet high, these can be devoted to cabinet and other pictures, to which side light is unobjectionable. The upper stories of the pavilions are lighted from the domes. A space of about one hundred thousand superficial feet is lighted from above, and thirty thousand by side lights. We make these suggestions whilst describing "Memorial Hall," the object will be explained in describing the separate Art Gallery.

The interior of the building is intended to be plastered hard finish, and all painted throughout in fresco.

HEATING AND VENTILATING.

Provision is also made for warming by direct and indirect radiation combined, that being the most effectual mode for a building of this magnitude, and for its purposes. The heat is to be distributed by the circulation of steam, partly through radiators in the cellar, and through others placed in the various parts of the building for direct heat. The system of heating is readily controlled in this way, and can be applied to any apartment separately. The boilers are located beneath the terrace, outside the limits of the building (and the fuel and ashes), at a convenient point, keeping the cellar clear of gases, dust, &c.; this is a necessary provision, in order to secure a building well warmed and ventilated. We propose to exhaust the cold air by fans, together with heated shafts.

The wash rooms and other conveniences are in the basement beneath the pavilions, at the four corners, entirely separated from the cellar, and approached by stair cases beneath those in the main story.

Ample provision has been made for lighting by gas, with jets, brackets, chandeliers, &c., distributed throughout as required by the various apartments.

Arrangements have also been made for the conveyance of water to each division, where hose can be attached for cleaning, &c. Tanks can be placed in the four corners of the centre building, at the level with base of dome, if thought desirable.

MATERIAL FOR WINDOW FRAMES, &C.

The window frames are of iron; all filling in bars of rolled iron made to the form of sash. This gives a light, durable and economical sash, preferable to wood, as that would not resist the heavy winds in windows of the requisite size. Those made of iron possess the additional advantage of being fire proof.

The windows or screens in the arches of the centre building, fronting east, are also of iron, formed of medallions arranged in circles; the arms of the United States occupying the centre. The first circle is composed of stars representing the thirty-seven States; surrounding these are the arms of the thirteen original States, with Pennsylvania as the Keystone; another circle embraces the States since admitted, with the national eagle for the key; the Territories surround these, with an eagle between the medallions, and the District of Columbia in the centre; an outer circle of stars completes the emblematic design. On the west is a corresponding screen, with the eagle in the centre, and stars take the place of the arms of the States (as stated elsewhere).

ART GALLERY.

The Art Gallery is located a distance of about one thousand feet east of the exposition building, parallel with the Art Museum, and of the same length, and embraces a centre building, two wings, and pavilions at the four corners.

The centre is two hundred and twenty-five feet from east to west, and extends one hundred feet north and south; each wing extends two hundred and fifty feet north and south from the centre, and are one hundred and ten feet wide. The ends, including the pavilions, are one hundred and seventy-five feet east and west.

The main picture gallery is in the centre, extending north and south, and fifty feet in width, and thirty-eight feet high, giving sixteen hundred lineal feet of wall surface, with the ceiling rising six feet higher, for light and ventilation. The gallery is divided by a range of ornamental columns through the centre, forming an arcade. Each division opens into the central square beneath the dome light, thus preserving the vista the entire length. This central section separates those visitors who are entering from those making their egress, as they pass through one side and return on the other, yet obtain a view of the whole gallery in going either way, broken somewhat in perspective by the arcade, which adds to the effect.

The main entrance to the gallery is through the spacious vestibule in the central section (which faces the Art Museum). Offices are arranged on either side. The rest of the central portion is intended for statuary, and a space is reserved for stairs on the rear, within the corresponding space occupied by the vestibule on the front, together with apartments for wash rooms and water closets. This portion of the building is three stories in height. The second and third for cabinet paintings, casts or medals, engravings and lithographs.

Galleries extend along each side of the main picture gallery, twenty-five feet wide, and two stories in height, equal to the height of the main gallery. The first story of these is intended for statuary; the circular alcoves in the centre of each section are for groups and resting places. The second story of this section to be devoted to sketches, photographs, engravings of wood, steel, and copper, chromo-lithographs, &c, these rooms are lighted by the ordinary side windows, but the picture gallery and central portion from above, by the north light, so diffused that cross lights are avoided, the position of the building, extending north and south, facilitates this mode of lighting. The end pavilions can be used for studios, or other purposes required.

It is proposed to elevate this building eight feet above the present surface, surrounded by a terrace four feet high. The base of granite, if intended for a permanent structure, but brick to be used if only temporary.

As the building is fire proof, it must be of solid materials (brick the most economical). The foundations to be of stone, so far as they apply to the exterior walls; all inner ones may be brick, with stone footings, and the first floor vaulted for tile.

The walls of the superstructure to be constructed with brick, and varied in color.

The ornamental work will be moulded and cast in zinc. All the exterior walls are constructed with a hollow space of eight inches. The inner lining eight inches and bound to the body of the wall with withs. This open chamber will be smoothly plastered on the inside. The inner walls are constructed in the same manner. All the walls by this treatment are free from dampness, and none that are used for hanging pictures upon are exposed to the weather.

The construction of the building is greatly simplified, by the proposed division through the centre of the main picture galleries. No span is greater than twenty-five feet, and it can be readily made fire proof at a moderate expense. If it is to be a permanent structure, we would recommend iron beams and arches between them; and wooden beams, if temporary; iron sheet lathing for the ceiling, and a rough floor, coated with mortar one inch thick, to receive the regular floor. This will effectually prevent the communication of fire to the flooring beams. This only applies to the second floor of the outer halls, that are two stories in height. The main gallery being but one story and vaulted beneath; the floor of this being of tile, the walls fire proof, and the roof of iron, the building would be free from risk.

Heating apparatus can be placed in the cellar for a system of indirect radiation, and provision made for thorough ventilation; the current being downward for winter, by exhausting the cold air from the floors. The system is reversed in summer. Ventilators are placed in the ceiling for this purpose, and the upward current escapes through ducts in the loft, that connect with vertical shafts, for its final discharge.

The necessary arrangements have been made for lighting by gas. The burners so placed as to throw the light upon the wall surface, and are concealed from the eye.

The roof is of corrugated iron, as described for "Memorial Hall" and Exposition Building.

Allow me at this point to make a suggestion at variance with your instructions; which is—to make an art gallery in the second story that surrounds the "Memorial Hall." Having given this subject some thought whilst preparing the plan, and provided four separate galleries, forty-two feet wide and one hundred and fifty feet long (with double wall surface), all opening into the end pavilions, and also into the vestibules in the centre, thus giving an extended vista of six hundred feet, the whole length of the "Memorial Hall," on both sides of the building. The floors of these are on a level with the gallery that surrounds the hall, and communicates with the gallery of the Exhibition Building.

As the ends of the permanent building have two stories within the section allotted to the galleries, the space could be made available for small pictures, &c., and statuary placed in the first story beneath these apartments. The space is quite equal to that specified for the separate Art Gallery, and all divisions have direct communication with the first floor and gallery of Memorial Hall. Six stairways communicate with all points.

The additional cost necessary to make these portions of the hall fire proof, would not equal the outlay for the construction of a separate gallery. The sash are of iron, and the walls double, so that in event of fire in the temporary structure (which adjoins one side), no damage could ensue to the pictures within the galleries.

This is a more economical as well as convenient arrangement, and gives more grandeur of effect and importance to the Memorial Building, at the same time attaining its purpose, that of making it *A National Art Museum.*

THE GROUNDS, &C.

As the grounds allotted to the Exhibition Buildings are limited to the width between Lansdowne drive on the north and Elm avenue on the south, there are no opportunities for decoration in this direction; and as the permanent structure will most appropriately face the east, it secures the advantage of an extensive foreground, and beyond these decorated limits is the continuation of the Park, with the river and city in the distance, giving a view on the approach, unsurpassed for beauty and variety.

The grounds as far east as the Art Gallery are laid out with roads and walks, decorated with fountains, statues, &c.

A drive one hundred feet wide, semicircular in form, leads to the main entrance; this is extended to, and around the Art Gallery, forming four connections with Lansdowne drive, and the same number with Elm avenue, having walks extending in all directions.

There are also drives to the north and south ends of the permanent building, each having two connections with Lansdowne drive and Elm avenue. A covered way connects the Exposition Building with Machinery Hall, for protection in stormy weather. The present Park drives give easy access to the west end of the building, and but few alterations are necessary. We propose to change the direction of Belmont avenue for a short distance, and extend it parallel to the West front of the building, and after its removal, the road could occupy its original position.

The principal fountain (as will be seen by the block plan) is located on the front of the main building, with large jet in centre, surrounded by thirty-seven smaller ones, representing all the States in a single group; and fountains, lamps, statues, appropriate and emblematic, with other ornaments, distributed over the ground. The statue of Prosperity, central and immediately in front of the Art Gallery.

Covered platforms are proposed along the line of Elm avenue, for convenience of passengers, as this will naturally be the principal approach from the horse cars, and covered ways could readily be constructed from these platforms to the entrance doors. They would slightly obstruct the view of the grounds, and render the walk less pleasant, and add considerably to the expense. This outlay upon the grounds would not be lost, as, in the case of a covered walk; as the one between Machinery Hall and the Main Exposition Building, furnishes all necessary protection from storms.

MACHINERY DEPARTMENT.

That the plans may be more complete, we have prepared a set of drawings for the Machinery Department—a ground plan, side elevation and cross section. This building occupies an area of about eleven acres, and is located two hundred and twenty-five feet west of the Main Exhibition Building, with which it is connected by an archway across Belmont avenue.

The galleries of the two are connected, as stated in the description of Exhibition Building.

The Machinery Department is three hundred feet wide, and sixteen hundred feet long, with nave one hundred feet wide, and four side aisles, each fifty feet. The height of stories, manner of constructing the roofs, and mode of lighting, are shown by the cross section and side elevation.

The railway enters the basement at the west end, and the upper floor at the east end between the buildings. The piers of these are brick. Truss rafters for the roofs of the aisles, and circular ones of lattice truss for the centre. The gallery along each side of the nave is thirty-one feet wide, twenty-five feet high, and so arranged that a railway for cars can be placed along the narrow portion of the gallery, to convey visitors to and fro through Machinery Hall, from which every part of the Exhibition Building is visible.

A building upon this plan could be thoroughly lighted and ventilated, and have all arrangements necessary for water closets, &c.

It is proposed to cover the roof with Manilla hemp felt. The system of drainage to be similar to that described for the Exhibition Buildings, and the floors constructed in the same manner. The boilers for generating steam for machinery in motion, are at the extreme western end, where fuel could readily be supplied by both the Pennsylvania and Reading Railroads.

The boilers can be placed in fire proof construction, so as not to endanger the Exhibition Building.

RESTAURANTS.

Ample provision has been made for restaurants, located at the west end of the Exhibition Building, and distributed along the Machinery Department.

This will give extensive accommodations, placed at the most accessible points, as the throng of visitors will naturally pass in that direction to Machinery Hall, Horticultural Grounds, and Conservatory.

In the preparation of these plans my aim has been to secure such a division of the interior as to adapt it to the dual system of classification recommended. The arrangement of the buildings and avenues in their relative positions to this end, has already been sufficiently explained in the preceding description, which, together with the drawings, are herewith submitted to your favorable consideration.

I am, yours respectfully,

SAMUEL SLOAN,
Architect.